

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-17, 53, 56, 59, 62-89 and 116-140 are presently active in this case. The foregoing amendment amends Figures 53-58 to depict a legend reciting "background art;" amends Claims 1, 53, 56, 59, 62, 73, 88, and 89; adds new Claims 116-140; and cancels Claims 18-52, 54, 55, 57, 58, 60, 61, and 90-115 without prejudice or disclaimer. Support for the amendments to Claims 1, 53, 56, 59, 62, 73, 88, and 89 can be found on pages 5, 6 and 7 of the specification and Figures 1 and 54-58, for example. As newly added Claims 116-138 recite the features of claims indicated as reciting allowable subject matter in the outstanding Office Action, support for the newly added claims can be found in original Claims 9-11, 13-17, 64-66, 70, 71, 75-77, 79-81, 83-85, and 87. Support for newly added Claim 139 can be found at page 34, lines 11-18 of the specification, for example. Support for newly added Claim 140 can be found at page 111 of the specification, for example. No new matter is added.

In the outstanding Office Action, Claims 18-52, 54, 55, 57, 58, 60, 61, and 90-115 were not addressed on the grounds of multiplicity; Claims 73, 88, and 89 were objected to for minor informalities. Claims 1-8, 53, and 56 were rejected under 35 U.S.C. §102(b) as anticipated by Yoshikawa (JP 11-174922, hereafter, "Yoshikawa") or alternatively the U.S. counterpart, Yoshikawa (U.S. Patent No. 6,128,461); Claim 12 was rejected under 35 U.S.C. §103(a) as obvious over Yoshikawa in view of Muramatsu (JP 7-337042); Claim 59 was rejected under 35 U.S.C. §103(a) as obvious over Yoshikawa in view of Matsuguma (U.S. Patent Pub. 2003/0063928); Claims 62, 63, 67-69, 72-74, 78, 82, 86, and 88 were rejected under 35 U.S.C. §103(a) as obvious over Yoshikawa in view of Nakamura et al. (JP

2002/268490, hereafter "Nakamura"). Claims 53 and 59 were rejected under 35 U.S.C. §103(a) as obvious over Matsuguma in view of Yoshikawa; and Claims 88 and 89 were rejected under 35 U.S.C. §103(a) as obvious over Matsuguma in view of Yoshikawa and further in view of Nakamura. Claims 9-11, 13-17, 64-66, 70, 71, 75-77, 79-81, 83-85 and 87 were indicated as reciting allowable subject matter.

Applicants note with appreciation the indication that Claims 9-11, 13-17, 64-66, 70, 71, 75-77, 79-81, 83-85 and 87 recite allowable subject matter.

Applicants further note with appreciation the courtesy of the August 2, 2005 personal interview extended by Primary Examiner Susan Lee to Applicants' representatives during which the present amendments were discussed. The discussion focused on whether the cited references disclose a blade that vibrates so as not to curl toward an image carrier and whether the cited references disclose a blade vibrated at frequencies above 120 hertz. The Examiner agreed that Yoshikawa appears to require a blade that curves toward the image carrier and that Yoshikawa discloses frequencies in the range of 80 hertz to 120 hertz.

Regarding the objection to Claims 73, 88 and 89 for minor informalities, Claims 73, 88 and 89 are amended to address the minor informalities. Specifically, the term "a image" is amended to recite "an image." Accordingly, Applicants respectfully request withdrawal of the objection to Claims 73, 88, and 89.

Regarding the rejection of Claims 1-8, 53, and 56 as anticipated by Yoshikawa, that rejection is respectfully traversed by the present response.

Amended Claim 1 recites, in part, "a vibrating unit that vibrates the vibratable members so that the end of the blade member does not curl toward the image carrier."

In contrast Yoshikawa specifically requires its blade to curl toward the image carrier during normal operation in order to provide a "slip-stick" action which cleans toner from the

image carrier.¹ As shown in Figs. 6A and 6B, Yoshikawa takes advantage of the slip-stick motion of the blade as the blade responds to the motion of the image carrier. The blade curls toward the surface of the image carrier as shown in Fig. 6A. Then, as shown in Fig. 6B, the blade slips relative to the surface of the image carrier. As the blade is restored to its “slip state,” energy is provided to the toner particles, thus removing the toner particles from the image carrier. Accordingly, as discussed in the personal interview, Yoshikawa, does not disclose a vibrating unit that vibrates a vibratable member so that the end of the blade member does not curl toward the image carrier. Rather, to provide a cleaning effect, Yoshikawa depends on the blade to curl toward the image carrier and then slip back to an original position. In fact, Figs. 6A and 6B of Yoshikawa depict a slip-stick action very similar to the curling action shown in background Figs. 54-57, which are overcome by amended independent Claims 1, 53, and 56, among others. Therefore, Applicants respectfully submit that amended Claim 1 patentably distinguishes over Yoshikawa for at least the reasons discussed above.

Claims 2-8 and 12 depend, directly or indirectly, from amended Claim 1. Accordingly, Applicants respectfully submit that Claims 2-8 and 12 patentably distinguish over the cited reference for at least the same reasons as amended Claim 1.

Independent Claims 53, 56, 59, 62, 73, 88, and 89 are also amended to recite the feature of a blade member that does not curl toward the image carrier. Accordingly, Applicants respectfully submit that Claims 53, 56, 59, 62, 73, 88, and 89 patentably distinguish over Yoshikawa for at least the same reasons as discussed above regarding amended Claim 1.

Regarding the rejection of Claim 12 as obvious over Yoshikawa in view of Muramatsu, that rejection is respectfully traversed. Claim 12 depends from amended Claim 1

¹ See Yoshikawa, column 5, line 53 – column 6, line 11.

and distinguishes over Yoshikawa for at least the same reasons as amended Claim 1.

Muramatsu does not remedy the deficiencies discussed above regarding Yoshikawa. For example, Muramatsu does not disclose any form of vibrated blade. Accordingly, Applicants respectfully submit that amended Claim 12 patentably distinguishes over the cited references for at least the reasons discussed above.

Regarding the rejection of Claim 59 as obvious over Yoshikawa in view of Matsuguma, as Claim 59 is amended to incorporate the feature of a blade that does not curl toward the image forming apparatus, Claim 59 patentably distinguishes over Yoshikawa for at least the same reasons as amended Claim 1. Matsuguma does not remedy the deficiencies discussed above regarding Yoshikawa. Rather, Matsuguma does not disclose a blade that is vibrated such that the blade does not curl toward an image forming apparatus. In fact, Matsuguma does not even disclose a vibrated blade. Accordingly, Applicants respectfully submit that Claim 59 patentably distinguishes over the cited references for at least the reasons discussed above.

Regarding the rejection of Claims 62, 63, 67-69, 72-74, 78, 82, 86, and 88 as obvious over Yoshikawa in view of Nakamura, that rejection is respectfully traversed by the present response.

Independent Claims 62, 73 and 88 are amended to recite, “a vibrating unit that vibrates the vibratable members so that the end of the blade member vibrates to thereby clean the toner on the image carrier and so that the blade does not curl toward the image carrier.”

As discussed above regarding amended Claim 1, Yoshikawa does not disclose a blade that is vibrated so that it does not curl toward the image carrier.

Nor does Nakamura disclose the feature at issue. Instead, Nakamura merely discloses a static blade used for cleaning the image forming device. As the blade is static, it cannot be a blade that is vibrated not to curl toward the image carrier. Accordingly, Applicants

respectfully submit that amended independent Claims 62, 73 and 88 patentably distinguish over the cited references for at least the reasons discussed above.

As Claims 63, 67-69, 72, 74, 78, 82, and 86 depend, directly or indirectly, from either amended Claim 62 or amended Claim 73, Applicants respectfully submit that Claims 63, 67-69, 72, 74, 78, 82, and 86 patentably distinguish over the cited references for at least the same reasons as amended Claims 62 and 73. Accordingly, Applicants respectfully request withdrawal of the rejection.

Regarding the rejection of Claims 53 and 59 as obvious over Matsuguma in view of Yoshikawa, as discussed above neither Matsuguma nor Yoshikawa discloses a vibrating unit that vibrates a vibratable member so that the end of a blade member does not curl towards an image carrier as recited in Claims 53 and 59. Accordingly, Applicants respectfully request withdrawal of the rejection of Claims 53 and 59.

Regarding the rejection of Claims 88 and 89 as obvious over Matsuguma in view of Yoshikawa and further in view of Nakamura, that rejection is respectfully traversed by the present response. As Claims 88 and 89 are amended to also recite the feature of a blade member that does not curl toward an image carrier, and none of the cited references disclose this feature, Applicants respectfully submit that Claims 88 and 89 patentably distinguish over the cited references for at least this reason.

Regarding new Claims 139 and 140, Claim 139 recites a blade vibration frequency of 17 to 50 kilohertz, and newly added Claim 140 recites a blade vibration frequency of at least 1.5 kilohertz. Applicants respectfully submit that none of the cited references discloses a cleaning blade that vibrates at a frequency of at least 1.5 kilohertz or of between 17 kilohertz and 50 kilohertz. Yoshikawa describes a blade that vibrates at a frequency of between only 80 and 120 hertz. In fact, Yoshikawa teaches away from using higher frequencies for a

cleaning blade. In commenting on the 80 hertz to 120 hertz frequency range, Yoshikawa states:

From the above measurement results, in the vibration condition of the edge portion of the cleaning blade, it was found that the smaller both the maximum amplitude and the power spectrum of the frequency, the better the cleaning condition and that the **maximum amplitude and the frequency both have threshold values**. That is to say, when the smooth cleaning action is performed, the stick-slip movement of the edge portion of the cleaning blade is ideally effected in the tangential plane tangent to the generatrix of the cylindrical photosensitive drum, and, it was found that, when the vibration energy of the edge portion of the cleaning blade acting toward the measurement direction this time (normal axis to the photosensitive drum) is small, the good cleaning condition is obtained.² (emphasis added).

Yoshikawa also states:

FIG. 4B shows the vibration condition (time area) of the stick-slip movement of the edge portion of the cleaning blade when the press force of the cleaning blade against the surface of the photosensitive drum is located within the suitable range. In this case, it was observed that a maximum amplitude is about 0.3 μm and frequency is about 80 Hz and about 120 Hz.³

Accordingly, Yoshikawa not only fails to disclose or suggest the feature of vibration frequencies of at least 1.5 kilohertz or in the range of 17 kilohertz - 50 kilohertz, but teaches away from the use of such high frequencies. Therefore, Applicants respectfully submit that newly added Claims 139 and 140 patentably distinguish over the cited references for at least the reasons discussed above.

² Yoshikawa, col. 8, lines 14-27.

³ Yoshikawa, col. 7, lines 36-42.

Consequently, in light of the above discussion, and in view of the present amendments, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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IN THE DRAWINGS

The attached 6 sheets of drawings includes changes to Figs 53-58. These sheets, which includes Figs. 53-58, replaces the original sheets including Figs. 53-58.

Attachment: Replacement Sheet